



US006529844B1

(12) **United States Patent**  
**Kapetanic et al.**

(10) **Patent No.:** **US 6,529,844 B1**  
(45) **Date of Patent:** **Mar. 4, 2003**

(54) **VECTOR NETWORK MEASUREMENT  
SYSTEM**

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(\*) Notice: Subject to any disclaimer, the term of this  
patent is extended or adjusted under 35  
U.S.C. 154(b) by 0 days.

(21) Appl. No.: **09/389,768**

(22) Filed: **Sep. 2, 1999**

**Related U.S. Application Data**

(60) Provisional application No. 60/098,862, filed on Sep. 2,  
1998, provisional application No. 60/098,865, filed on Sep.  
2, 1998, provisional application No. 60/098,864, filed on  
Sep. 2, 1998, and provisional application No. 60/098,806,  
filed on Sep. 2, 1998.

(51) Int. Cl.<sup>7</sup> ..... **G01R 35/00**

(52) U.S. Cl. .... **702/85; 324/601; 324/613;**  
**702/76; 455/67.3**

(58) Field of Search ..... **324/76.53, 601,**  
**324/613, 638, 650; 702/85, 76, FOR 107,**  
**FOR 108, FOR 109, FOR 110, FOR 156,**  
**FOR 159**

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(57) **ABSTRACT**

A vector network analyzer (VNA) is provided with three test ports and an integration of hardware and software to make an integrated set of measurements for two and three port devices. The integrated capability allows for fast, versatile measurements that benefits, in accuracy and convenience, from sharing of data and resources with other measurements. The VNA includes a first signal source which is selectively connectable through reflectometers to two of the three VNA test ports. A second signal source provides connection through a third reflectometer to a third test port to enable full vector error corrected 3-port S-parameters measurements to be made. The two signal sources, along with software configuration of the VNA to operate in a non-ratioed mode provides for measuring second and third order intercept measurements. The two signal sources and software also enable the VNA to be used to make frequency translation measurements of a mixer including accurate frequency translation group delay measurements. The VNA further includes components to enable DUT noise figure to be determined, and to provide automatic calibration. The VNA further provides a process for harmonic measurement accuracy enhancement, and includes a dual mode multiple source/LO module to provide common mode noise rejection and fast measurement speed.

**13 Claims, 9 Drawing Sheets**

